REMARKS

This is a complete and timely response to the non-final office action mailed on February 6, 2006.

Claims 1 -18 are rejected under 35 U.S.C. 103(a) as being unpatentable over John H. Clements. This source does not give any indication that alkylene carbonates can react with esters or polyesters as is taught in Application Number 10/708,479. John H. Clements states, beginning at the last line of the first column on the first page, "The alkylene carbonates produced react with aliphatic and aromatic amines, alcohols, thiols, and carboxylic acids. Under certain conditions, they can also undergo ring-opening polymerization. It is the intent of the author to discuss each type of reaction in detail, from the reaction mechanism and conditions required to a brief description of the application in which each reaction finds utility," John H. Clements does not discuss any reaction between cyclic alkylene carbonates and ester or polyester moieties. Alkylene carbonates are said to increase the thermal stability of polyesters when carboxylic acid end groups are present on a polyester molecule. If the end member on either end of a Polyethylene Terephthalate(PET) polymer chain is terephthalic acid (as opposed to ethylene glycol, the other raw material for polymerization of PET), a carboxylic acid end group will be present which may participate in decomposition reactions with the polyester chain; alkylene carbonates are known to react with carboxylic acids and thereby convert the carboxylic acid group into a non-reactive ester group . There is no disclosure of any decomposition reaction involving alkylene carbonates and

PET polyester as disclosed in the present application.

US. patents 4,327,207 and 4,348,314, assigned to Allied Corporation, teach the addition of small amounts of ethylene carbonate (EC) to PET, in the presence of a catalyst, to increase the temperature stability of the polymer. This long-term stabilization effect is attributed to the reaction of the EC with carboxylic acid end groups because said carboxylic acid end groups are said to be reactive with the PET polymer chains. These: patents do not disclose any PET decomposition or polymer chain degradation associated with the reaction of EC with the carbox late groups on the ends of the PET polymer chains.

Examiner notes that John H. Clements discloses specifically that EC has been reacted with PET polyesters in an effort to reduce the acid number of the material, In the paragraph precedin9 Table 2 on the third pa9e, John H. Clements states, "EC has been reacted with poly(ethylene terephtlialate) (PET) polyesters in an effort to reduce the acid number of the material. PET polyesters are excellent materials for industrial conveyor belts that operate under heavy loads and at high speeds. However, degredadation of the polymer can occur over time, resulting in reduced tensile strength and even visible cracking. Researchers at Allied discovered that a more chemically resistant material could be obtained simply by reacting the polymer with EC, thereby reducing the number of carboxylic acid end groups at which degradation typically occurs. The modification procedure follows the polycondensation of dimethyl terephthalate or terephthalic acid with

ethylene glycol and involves the addition ofan alkali metal salt such as potassium iodide.

Typically, 0.5-1.0 wt % EC is added and allowed to react at 280 "C for 5-15 min. The result is a material with an acid number of <3 (mg of KOHlg) as compared to approximately 20 for the untreated polymer." John H. Clements reference 25 is U.S. patent 4,348,314.

The reaction *of* an alkylene carbonate with a carboxylic acid group is taught by John H. Clements to result in the formation of an ester. His Figure 3 shows reaction of alkylene carbonate with carboxylic acid. 'This reaction would not degrade a PET molecule containing either one or two carboxylic acid end groups, but would simply increase the PET polymer chain length very slightly by adding one or two more ester linkages to the molecule. The Allied Corporation patents demonstrate that the physical properties of the polyester are enhanced by reaction with alkylene carbonate in the amounts and under the conditions taught.

Examiner further notes that it is already known that cyclic ester solvents such as cyclic alkylene carbonates may be used as solvents for PET in general. Prior art dissolution of polyesters in alkylene carbonates has been a physical process in which the polyester is chemically unchanged as demonstrated by the teachings that the PET can be precipitated from an alkylene carbonate solution to obtain a polymer capable of being substituted for virgin PET in the formation of PET fibers.

U.S. 4,118,187 to Sidebotham teaches the use of propylene carbonate as

a solvent for polyester as a means of recovering polyester polymer for reuse in polyester fiber production. Column 3, line 16 states, "It is also preferred that solvents employed in this invention do not significantly degrade or depolymerize the polyester under conditions required for removal by evaporation."

U.S. 5,554,657 (Brownscombe) teaches the use of ethylene carbonate and propylene carbonate as solvents for polyester to recover polyester from a mixed polymer waste while maintaining the integrity of the polyester polymer. Claim 13 begins, "A process for recovering a polyester polymer from a mixed polymer recycle stream, while maintaining the polyester p lymer in polymer form, comprising", and specifically names ethylene carbonate and propylene carbonate as "selective solvents" in the third step of the process described in Claim 13. Thus the prior art teaches dissolution of PET in alkylene carbonates as a physical process which is specifically taught to allow reprecipitation and recovery of PET in its original polymeric physical form.

Examiner states, "Thus, the reference discloses the decomposition of PET except for the specific use as dissolving "waste" PET which is often in the form of face fibers." Applicants wish to draw examiner's attention to the distinction between the dissolution taught in the prior art, a physical phenomenon which does not alter the PET chemically and allows for recovery of the intact polymer chains by cooling of the solvent, and the decomposition of PET taught in the present application, a chemical phenomenon which results in a material having substantially different

characteristics, specifically in terms of its solubility or miscibility in cyclic alkylene carbonate.

Conclusion

Applicants respectfully submit that all outstanding objections have now been traversed, and that pending Claims 1 – 18 are in condition for allowance. Favorable reconsideration and allowance of the present application and pending Claims 1 – 18 are hereby courteously requested.

Respectfully Submitted,

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